

American Contact Dermatitis Society Contact Allergy Management Program: An Epidemiologic Tool to Determine Relative Prevalence of Contact Allergens

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Background: Data on the prevalence of contact allergy in North America are currently reported by groups of academic contact allergy specialists at select academic centers. Sampling of data from numerous centers across North America, including practices performing more limited patch testing, would provide a broader perspective of contact allergen prevalence in North America. The American Contact Dermatitis Society Contact Allergy Management Program is an ideal tool for collection of epidemiologic data regarding contact allergy prevalence in North America.

Objective: The aim of the study was to identify the relative prevalence of contact allergy to common contact allergens in North America.

Methods: Mapping of Contact Allergy Management Program (CAMP) data was performed to allow analysis of how frequently searches were performed for various contact allergens. The number of searches performed for specific allergens provides a measure of the relative prevalence of contact allergy to these allergens.

Results: The top 35 allergens for the period from November 18, 2012 to November 18, 2013 are reported. Although these data are useful, specific recommendations for minor alterations to CAMP are discussed, which will allow future CAMP data to be stratified and more powerful.

Conclusions: With minor modifications, CAMP can provide a quantum leap in the reporting of contact allergy epidemiologic data in North America.

Data on the prevalence of contact allergy to various allergens are of critical importance in determining what substances should be chosen for patch testing. The relative prevalence of contact allergens is not stable but instead is constantly changing because the materials and ingredients used by industry evolve.

In North America, groups of contact allergy specialists have pooled their individual patch test data to provide estimates of allergen prevalence. The North American Contact Dermatitis Group (a group of 15 physicians) and the Mayo Clinic group (a group of 8 physicians) are examples.^{1,2} These groups include data solely from specialized patch test centers in limited geographic areas. Although this information is extremely valuable, a sampling of data from numerous centers across North America, including practices performing more limited patch testing, would

provide a broader perspective of contact allergen prevalence in North America.

The American Contact Dermatitis Society's Contact Allergy Management Program (CAMP) is a database containing full ingredients on more than 5000 common products and is designed so that practicing physicians can find safe products for patients with contact allergy to various substances.³ The database is used by a large number of doctors performing patch testing in North America. When using CAMP, physicians check the boxes corresponding to the allergens identified by patch testing for their individual patients. Access to data on how frequently allergen checkboxes are chosen would provide compelling data on the prevalence of various contact allergens in North America.

Until November 18, 2013, CAMP data were stored in a manner allowing easy mapping of raw data. The data analyst for CAMP (D.S.) was able to map raw data and match it to corresponding allergens. From November 18, 2013 until July 2015, data were stored in a compressed manner, comma delineated, which precluded easy data analysis. However, in July 2015, CAMP again reverted to data storage on separate lines to allow easier data mapping. With this modification, CAMP can now be used as a research tool.

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TABLE 1. The Top 35 Allergens Searched in CAMP From November 2012 to November 2013

Fragrance	8016	Fragrance standard/ supplemental/mix
Nickel	6856	+ Nickel sulfate hexahydrate
Cobalt	4367	
Balsam of Peru	3966	
Methylisothiazolinone	3561	± Methylchloroisothiazolinone, Kathon CG
Neomycin	3523	+ Neomycin sulfate, neomycin sulfate
Gold	3231	+ Sodium thioaurosulfate
Methyldibromoglutaronitrile	3124	+ Euxyl K400
Formaldehyde	2931	
Propylene glycol	2866	
Iodopropynyl butylcarbamate	2670	
Carba mix	2644	
Quaternium 15	2544	
Bacitracin	2416	
Potassium dichromate	2349	
Lanolin	2266	+ Lanolin alcohol, wool alcohol, Amerchol L101
Paraphenylenediamine	2188	+4-Phenylenediamine base
Cocamidopropyl betaine	1872	
2-Bromo-2-nitropropane-1,3-diol	1646	+ Bronopol
Thimerosal	1550	
Glutaraldehyde	1509	
Propolis	1438	
4-tert-Butylphenol formaldehyde resin	1290	+ Paratertiary butylphenol formaldehyde resin
Parabens	1236	+ Paraben mix
Thiuram mix	1190	
Ethylene urea melamine formaldehyde	1047	EUMF
Tixocortol pivalate	1031	
Tosylamide resin	979	+ TSF resin, toluene sulfonamide formaldehyde resin
Benzalkonium chloride	952	
Ethylenediamine	945	
Colophony	924	
DMDM hydantoin	891	
Diazolidinyl urea	888	
Imidazolidinyl urea	869	
Disperse blue 106	869	

The data accumulated from CAMP's quick checkboxes are the easiest data to analyze. As an example, for the period from November 18, 2012, to November 18, 2013, the top contact allergens selected in CAMP are shown in Table 1. Although these

data are extremely useful, a couple of modifications would make these data more precise.

1. Many physicians only use the TRUE test of 36 allergens. These 36 allergens are overrepresented in the CAMP data. Solution: CAMP will need users to check a box on an initial screen, which indicates whether they have used the TRUE test, the ACDS core series, the NACDG standard series, or another standard series, and data from each of these sources can then be stratified and tabulated separately.
2. Some physicians only enter allergens, which are clearly cosmetic into CAMP. Therefore, allergens such as carbamates, which have less relationship to the products in CAMP, may not be entered by some physicians and will be underrepresented. Solution: CAMP users will also need to check a box indicating whether they have entered all allergens their patient tested positive to. Data from these physicians will give an estimate on the relative prevalence of reactions to all contact allergens. Data from physicians only entering cosmetic allergens into CAMP will give an estimate of the relative prevalence of reactions to cosmetic allergens.

The CAMP data from advanced searches can also be analyzed. With the advanced search function, selected potential cross-reactors, which were not actually patch tested, may also be included in the CAMP data. Therefore, the only relevant advanced search data which can be analyzed are for commercially available allergens where it is clear that these allergens were actually tested. Advanced search data can help give an estimate on how often less common allergens are searched for and which less common allergens are useful to dermatologists.

In addition to the 2 checkboxes proposed previously, data from CAMP can potentially be even more useful if a few additional checkboxes are included on an initial CAMP entry screen. These boxes would indicate the patient's age, sex, and atopic history (ie, checkboxes indicating personal and/or family history of respiratory allergies, eczema, and urticaria).

With the previous modifications, CAMP can provide a quantum leap in the reporting of contact allergy epidemiologic data in North America.

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